



Fraud Risk and the Visibility of Carbon

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Abstract

In recent years, carbon has been increasingly rendered 'visible' both discursively and through political processes that have imbued it with economic value. Greenhouse gas emissions have been constructed as social and environmental costs and their reduction or avoidance as social and economic gain. The 'marketisation' of carbon, which has been facilitated through various compliance schemes such as the European Union Emissions Trading Scheme, the Kyoto Protocol, the proposed Australian Emissions Reduction Scheme and through the voluntary carbon credit market, have attempted to bring carbon into the 'foreground' as an economic liability and/or opportunity. Accompanying the increasing economic visibility of carbon are reports of frauds and scams – the 'gaming of carbon markets'(Chan 2010). As Lohmann (2010: 21) points out, 'what are conventionally classed as scams or frauds are an inevitable feature of carbon offset markets, not something that could be eliminated by regulation targeting the specific businesses or state agencies involved'. This paper critiques the disparate discourses of fraud risk in carbon markets and examines cases of fraud within emerging landscapes of green criminology.

Keywords:

Fraud, risk, carbon markets, green criminology.

Introduction

As carbon trading booms, fraudsters—and cops—are getting into the game.
(Shapiro 2010)

Carbon dioxide, a toxic air pollutant, has in recent years become an economic opportunity through projects that abate or reduce emissions. 'Credits' derived from these projects can be traded in both the compliance and voluntary markets and used to 'offset' emissions.

Widespread fraud in trading in the European Union Emission Trading System (EU ETS) and in the production and sale of carbon credits from carbon abatement projects (offset projects) has been widely reported in the media (Lohmann 2010). Anthropogenic climate change is highly politicised and claims of fraud are asserted by disparate political actors, from green lobbyists who argue that carbon markets are a form of 'commodification of nature' to climate sceptics who link carbon fraud as one of the arguments for inaction on global warming (MacKenzie 2009: 451). Carbon fraud discourse is situated within this ideological contest and is often drawn on as an argument within a more generalised critique of offset credit schemes.

There is a dearth of scholarly literature assessing the risk of carbon fraud and little examination of the problem from a criminological perspective (Drew and Drew 2010). Questions regarding the nature and extent of fraud in these contexts and their relationship to the quite unique institutional arrangements of carbon markets have been left unanswered and undeveloped. To what extent is fraud and fraud risk related to carbon commodification and marketisation? Is carbon simply another context for traditional scamming and fraud or is there some systemic relation between carbon marketisation and fraud? This article will address these questions and assess the extent to which carbon has become socially and economically visible with a market identity of special significance.

The carbon markets

The origins of carbon markets or emissions trading are found in the 1997 Kyoto Protocol. In an attempt to reduce global greenhouse emissions, Kyoto established a range of mechanisms that would incentivise nation states and corporate polluters to lower air pollution levels. In essence, Kyoto created a new political and economic identity for carbon dioxide through its incorporation into global trade networks. As a result, carbon has become a 'property like right' (Christensen et al. 2013) where the big polluters can trade in carbon certificates which grant a right to emit.

Carbon markets are artificially constructed mechanisms that aim to internalise the costs of greenhouse gas (GHG) pollution within firms. As such, they provide a price signal to companies that encourage minimisation of GHG emissions or a displacement of emission savings through offsets. Markets can only occur when the commodities being traded are commensurable and so exchange values must be known and trusted. GHG instruments are remarkable to the extent that they represent no value as a tangible commodity but instead represent a permit or, more accurately, a means of settling a *liability* created through GHG emissions (Mackenzie 2009: 448). In creating this symbolic commodity, a multiplicity of projects and technologies in action must be made commensurate. Given this process, plus the intangibility of the instrument and the political basis for its value, issues of compliance, regulation and the potential for fraud are significant concerns (Drew and Drew 2010).

Carbon markets take varied institutional forms reflecting the political contingencies of nation states and supranational agreements. It is useful to understand them along two dimensions – firstly, whether they are compliance or voluntary markets and secondly, whether the primary transactions of carbon instruments are to settle GHG liabilities (paying to pollute) or to create carbon assets. These assets can be created through a firm reducing their emissions or through other offsite projects that reduce emissions. Firms can buy 'offset credits' from these projects to offset their own emissions. Examples of offset projects in Australia include a Methane producing piggery at Young, NSW (ABC News 2012) estimated at producing \$80,000 per year of credits; and an Indigenous fire management project (Middleton 2013) in the Northern Territory where altering fire regimes has been estimated to produce about 20,000 credits per year (approximately \$100,000 per year). Firms can also source international offset credits derived from projects like reforestation and hydro-electric schemes. There is also a third dimension related to the 'tradability' of instruments both internally and with external markets. For

example, the so-called carbon tax in Australia is more accurately conceived as an ‘allowance’ scheme that is non-tradeable and to which liable entities must comply. In this scheme, Australian Carbon Units (ACUs) must be purchased by emitters and immediately ‘surrendered’ – so they are not ‘bankable’ or ‘tradeable’. The price of ACUs is set by the government rather than by price discovery through trading. In 2015, this scheme becomes a market through allowing banking and transferability. Price is then set by the ‘market’ but the availability or cap of ACUs is set by the government to create scarcity.

The more recent announcements in Australia of a staged link with EU ETS (which commenced in 2005) serve to illustrate the variability and contingency of carbon markets, and also how they interact. This could have implications for fraud and fraud risk particularly if tradable relationships between different markets are not accompanied by the harmonisation of other related regulations – for example, tax regimes and access to offset markets.

To explain how the markets ‘work’, we will describe how a mining company in Australia will interact with the carbon markets with full integration with the EU ETS within the current legislation. Because the Australian scheme is a ‘compliance’ scheme, they are required by law to account and pay for their GHG emissions. In market terms, these emissions are understood as creating a liability (similar to that of a firm borrowing money). This liability must be met within a certain period of time. The mining company has a number of options:

- Upgrade its operations to reduce emissions and hence the liability
- Purchase allowances from the Australian or European market
- Purchase allowances from government-run auctions
- Purchase credits produced from Australian or International offset projects.

The particular strategy that the company uses will depend on the prices for the credits or allowances and the marginal costs involved with reducing emissions.

All offset credits can be purchased in the voluntary markets but only specifically accredited credits, such as those regulated by the Clean Development Mechanism (CDM) or other national or international accreditations systems, can be traded in compliance markets (Kyoto, European ETS and proposed markets such as the Australian and Californian ETS). The voluntary markets are relatively small, transacting about 93 megatonnes of carbon dioxide (CO₂) compared to 10,000 megatonnes in the compliance markets (Peters-Stanley and Hamilton 2012: iv). Purchases are commonly made by companies that wish to demonstrate corporate responsibility and attract business by growing their image as ‘environmentally friendly’ and enhanced branding (Peters-Stanley 2008). Key buyers are major airlines and financial but there are a myriad of smaller buyers from event organisers, community groups and individuals. The voluntary market is largely unregulated by the state and, whilst being regarded initially as the ‘wild west’ of carbon markets, has seen some increasing self-regulation and greater standards of accreditation and certification (Hamilton et al. 2008: 53).

Carbon fraud discourse

Allegations of ‘fraud’ are common in the media and have come to represent a diversity of criticisms from (actual and potential) misrepresentation in the carbon markets and ‘fraud’ as government deception of ‘the people’, to actual criminal fraud in the compliance and voluntary carbon markets. The shifting of meaning from the criminological to the political enhances critiques of carbon markets. These carbon market technologies have come under increased scrutiny since they are intimately linked with debates around global warming.

The media has widely reported the risk of carbon fraud in both the allowance markets (EU ETS) and the offset credit market (Barrett 2011; Lohmann 2010: 21; Shapiro 2010). Large accounting

firms are informing their clients and releasing scoping documents such as Deloitte's 'Carbon Credit Fraud – The White Collar Crime of the Future' and, more recently, 'Carbon Credit Fraud – An Update'. Europol (2011: 29-30, 48) and Interpol (Wynn and Creagh 2009) have both warned of the high risk of organised crime involvement in carbon fraud. Peter Younger from Interpol warned of the risks of organised crime in the forestry sector and his comments were picked up by Reuters, the major daily newspapers in Australia, and in NGO commentary (for example Gilbertson and Reyes 2009: 63). Similarly, The Australian Crime Commission's (ACC) latest report on organised crime briefly mentions potential carbon fraud as a non-traditional organised crime activity (2011: 33).

The most sustained critiques on carbon credit fraud risk have come from NGOs such as Transparency International (2011), Global Witness in their report 'Forest Carbon Cash and Crime' (2011), and Greenpeace's 'Carbon Scam' (2009). The Corner House has maintained a sustained critique of carbon trading over the last decade (Gilbertson and Reyes 2009) with some mention of criminal fraud (Gilbertson and Reyes 2009: 73) and corruption (Gilbertson and Reyes 2009: 63). These reports question the authenticity of carbon credit schemes particularly in UN Reducing Emissions from Deforestation and Forest Degradation (UN-REDD) subnational projects and warn of the risks of criminal engagement in these schemes. Most of these reports again identify risks rather than actual cases although a number of anecdotes are given. In the case of 'Carbon Scam', Greenpeace analyses in detail the Noel Kempff Climate Action Project in Bolivia and identifies major shortcomings in the net emissions savings and 'avoided deforestation' (2009: 9-13). Such reports imply that the lobbying power exerted by the powerful participating companies and the relative weakness of the regulatory structure gives rise to form of carbon fraud or 'scam' at the global level. These weaknesses, however, also points to areas that could be exploited by organised crime and state corruption. Table 1 lists the types of carbon crimes reported by the media, police agencies and NGOs.

Table 1: Typologies of carbon crimes

<i>Typology</i>	<i>Crime risk</i>	<i>Markets affected</i>
Computer crime	Internet phishing, cyber-theft	Allowances, EU ETS
State crime	Recycling of carbon instruments	Allowances, EU ETS
Taxation crime	Missing-trader fraud (MTF)	Allowances, EU ETS
Scams	Investment scams, fake carbon credits, Ponzi schemes	Carbon credits for voluntary market
Corruption and bribery	Falsifying records, fake offset schemes, pressure on local people.	Carbon credits for voluntary and compliance market
Structural fraud	Fraud risk through poor incentive structure, inadequate validation and verification.	Carbon credits in for compliance markets

In the scholarly literature, there is significant critical work examining carbon markets as an extension of neoliberal governance and the commodification of nature (see Bailey et al. 2011; Paton and Bryant 2012; Pearse 2011; Thornes and Randalls 2007). Notably, some scholars argue that carbon fraud is symptomatic of wider systemic properties of carbon marketisation that are inherently corruptible (Lohmann 2010) and fraudulent (Bachram 2004) and this connects with concerns of NGOs. These critics believe that the way incentives are structured creates an essentially unregulatable market. This will be further elaborated in a discussion on 'additionality' later in the paper. Others, however, argue that 'marketisation' of carbon is a political project itself and can be shaped by social concern for its negative consequences (MacKenzie 2009).

Some of the literature briefly mentions criminal fraud – often as taken for granted within the offset carbon context. For example, Chan (2009: 159) states that ‘... the opportunities for fraud and manipulation in the offset market are significant and well-recognised’ as if carbon fraud is common knowledge. Others, such as Sedjo and Macauley (2011: 472) cite *The Guardian* and NGO sources for ‘Finally, fraud has already emerged as a problem in both the developing world and elsewhere and could become more serious if the values grow substantially’. The passage of text cited from the NGO simply states that ‘Without accuracy, appraisals of timber will be discredited, assays of biomass will be deceptive, and claims of sequestered carbon may be fraudulent’. Fraud is marginal in these studies but ironically is elevated from possibility to reality. Hence, much of the critical scholarly literature provides little insight into the risks of fraud in carbon markets in general and the vulnerability of the Australian system in particular. Carbon fraud discourse is embedded within the highly politicised environment of the carbon market and climate change debates. This is succinctly put by Mackenzie (2009: 451) who states: ‘There is a great deal of suspicion of them [carbon markets], ranging from right-wing distaste of emission caps to left-wing hostility to an extension of market relations’. Carbon fraud discourse is situated within this ideological contest.

Fraud and fraud risk case studies

Understanding the relationships between fraud and carbon markets requires analysis of some of the carbon crimes previously reported. This section looks at a number of the cases in depth – specifically, ‘missing trader’ fraud in the European Union markets; carbon investment scams identified by the Australian Transaction Reports and Analysis Centre (AUSTRAC); retailing of fraudulent credits by Shift2Neutral; and an analysis of the fraud potential in offset credit production within the Kyoto system.

Missing trader fraud in tradeable CO₂ permits

The EU ETS has experienced considerable fraud events including Missing Trader Fraud (MTF); internet password theft (Phishing); cyber-theft through carbon account hacking; and state level recycling of carbon instruments. Here we examine the MTF case and discuss the implications for carbon trading and the relationship of this type of fraud to the structure of carbon markets.

On Tuesday, June 2, 2009 there was a record trading volume of 19.8 million carbon credits on the BlueNext exchange, 160 per cent higher than for the average daily volume for the first five months of the year (7.4 million). The following day, trades dropped to 2.5 million (BlueNext 2011). On the next trading day, the BlueNext exchange was closed for CO₂ spot trading, and rumours were spreading that the emission trading system was affected by a large MTF fraud. Reacting to the risk of systemic damage to the market, the French authorities acted on June 10 by removing VAT from future transactions and the UK followed suit on July 30, effectively transforming emission allowances into securities.

Europol has estimated that in 2009, 5 billion euros were lost by member states through VAT Missing Trader Fraud (Europol 2009) although this figure might well be an underestimation (Nield and Pereira 2011: 259). Short-term loss of confidence was very apparent in subsequent trading after the MTF was suspected to have occurred, with trading volumes reduced to record low levels. Ainsworth (2009: 2) identifies the problem in terms of an increased concern that VAT deductions will not be forthcoming: ‘The underlying difficulty for the CO₂ market is – even if there is no fraud – just the possibility of being denied millions of euro in VAT deductions is a significant increase in risk. When risk rises, prices follow’.

VAT MTF takes advantage of the zero VAT rating on purchases of credits from another EU member. Figure 1 is a simplified representation of the fraud taken from Ainsworth (2009: 5). Entity B – the fraudster, purchases CO₂ credits from Entity A at market price but with no VAT

invoiced. B then on sells the credits to C (in the same country) at a slightly lower price to attract buyers but with an invoiced VAT charge that would normally be remitted to the tax office. Instead, Entity B goes 'missing' and makes a profit of 15 per cent of credit price minus the small discount.

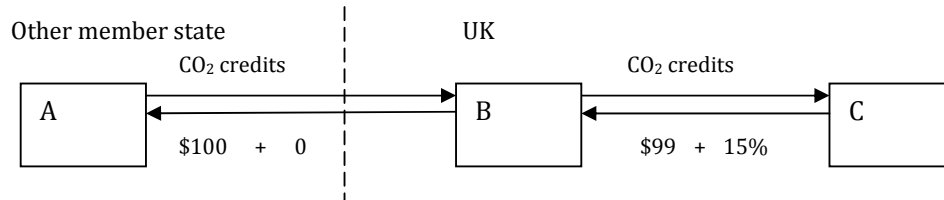


Figure 1: Simplified representation of the Missing Trader Fraud.

MTF frauds are thought to be much more complex in practice but Figure 1 represents the core of the fraud. The associated complexity is mostly related to covering the fraud trail or combining a number of these transactions into a 'carousel' that can yield very large amounts of money.

The fraud relies on situations where the transaction can happen quickly; where instruments can be easily exchange for money (fungible); and there are many buyers and sellers (liquid) in the market (Ainsworth 2009). The quick sale is enhanced when trading is based on narrow margins between buyers and sellers (again related to liquidity) and when there is a degree of anonymity between buyers and sellers. All these factors are systemic to mature markets and are characteristic of the EU ETS (Nield and Pereira 2011: 256). Ainsworth (2009: 14) identifies that this fraud is a result of 'opportunistic fraudsters taking advantage of a temporary break in the chain of fractionated payments'. The EU took centralised action to allow member states to apply a reverse charge through Council Directive 2010/23/EU, but this was an optional process still leaving many EU countries exposed to MTF (Nield and Pereira 2011:260). The fragmented response of the participant nations symbolises the core problematic of carbon governance in the EU and beyond in terms of fraud potential.

Investment scams

Carbon products have joined the long list of 'investments' that have formed the basis for various scams operated through 'cold calling' email or telephone. The Australian Transaction Reports and Analysis Centre (AUSTRAC) reported a fake carbon credits investment scheme that cost investors AU\$3.5 million (AUSTRAC 2011: 28-29). The scammers used environmental discussions to draw out potential victims and then placed follow up calls that tried to convince them of financial benefits. Those that took up the offer would be asked to transfer money to accounts in Taiwan and China. A professional-looking website had been constructed to allow victims to view their investment certificates. AUSTRAC attention to the scam was initiated by two very large follow-up transfers. Victims subsequently reported that they had no access to their certificates and they could not be liquidated.

Similar investment scams have been found overseas, particularly in countries with high visibility compliance and voluntary carbon emissions trading schemes. The high public awareness of the monetisation of carbon leads to opportunities for scammers to attract 'investment' money. The Financial Services Authority in the UK has recently alerted the public about a host of fraudulent carbon investment schemes that are offered to investors by salespeople, emails, telephone and postal mail or even by 'word of mouth' (Financial Services Authority 2012). The Australian Government's SCAMwatch has provided recent warnings to the public to be cautious when telephoned and offered rebates on the recently introduced carbon price (SCAMwatch 2012). Most compensation for the carbon price introduction has (and will)

occur through changes in the tax system; however, because of the relative newness of the system and uncertainty created through robust oppositional discourse, there is a significant level of confusion that can be exploited by scammers. Victims most often give their personal banking details to the caller who is impersonating a Government official.

Fraud in carbon credits for 'carbon neutrality'

Alarm bells about Shift2Neutral have recently been rung by the *Tribal Coalition of Mindanao* who in late November 2010 report that a 17 month old \$500 million Tricom Caraga Memorandum of Understanding between Shift2Neutral and Indigenous tribes of Caraga has been dissolved. The tribal people believe that they have been conned. This follows on from reports dated 6 October 2010 that a recently signed Shift2Neutral agreement in Congo was illegal. (Lang 2010)

Shift2Neutral, which claims to have worked with the Sydney Turf Club and the Australian PGA to make their events carbon neutral, has also been accused of distributing fake carbon (offset) credits and providing no evidence of successfully negotiating carbon offset programs (Cubby 2011).

Shift2Neutral does not just retail 'credits' for the voluntary market; it becomes involved in the sourcing of them, allegedly through deals that are not strictly illegal but rather create the impression of legitimacy which carries over to their credit sales. Typically, they will talk to somebody with influence or with an influential title in the project country, such as the Congo senator in the example below or a particular tribal elder, and then write a press release regarding the deal even though these potential partners rarely have the authority to deliver the project. The case of the Congo deal is instructive. The principal of *Shift2Neutral*, Peter Goldsworthy, released the following press statement on his web site:

Shift2Neutral and its partners sign an exclusive environmental contract with the Democratic Republic of the Congo through its Provinces, Tribal Chiefs, Land Owners and the spokesperson of the senate has signed a progressive (step by step) agreement with Shift2Neutral for environment and renewable energy to protect the forests, flora and fauna and improve the standard of living to the Democratic Republic of the Congo. (Goldsworthy cited in Lang 2010)

In Shift2Neutral's view, two separate signings took place:

1. Shift2Neutral and its partners (whoever they are) signed an 'environmental contract' with the Democratic Republic of the Congo through its Provinces, Tribal Chiefs and Land Owners.
2. The spokesperson of the senate signed an agreement with Shift2Neutral. This agreement is 'progressive' (step by step) for 'environment and renewable energy'.

However, shortly after, the Minister declared the agreement 'null and void' and illegal. This was never reported on the Shift2Neutral website. Indeed, the NGO REDD-Monitor which records projects recognised under the UN-REDD program has never found any official agreements and suggests that, if Shift2Neutral was really doing these publicised deals, it would be the biggest REDD operator in the world. This 'alienation' of the tradable credit from the project source is a particular problem with carbon-related crimes and is discussed in more detail in the examination of Kyoto-based credits.

Shift2Neutral is one of many brokers operating in the voluntary (offset) carbon market and is a classic example of a high-risk broker. A cursory examination of its website reveals that it

provides 'its own certification standard and solution' (Shift2Neutral 2013). Similarly, the description of projects is mainly in terms of broad types of projects rather than any specifics about location and how the project generates carbon savings.

In Australia, carbon credit sale and claims of carbon 'neutrality' of products are regulated under the *Trade Practices Act 1974* (the Act) administered by the Australian Competition and Consumer Commission (ACCC) (see ACCC 2008). The Act provides for penalties for false or misleading representations or conduct but has no regulatory authority over the production of credits and provides no governance framework that would mitigate against double counting of credits (Wilcox and Rennie 2012). Further, it does not have the capability to check the integrity of the credits since many are sourced overseas. Notwithstanding the involvement of the ACCC, the potential for fraud in these markets rests on the capability of consumers to discern the relative risk of particular credits. Importantly, the transfer of risk from brokers to consumers (or producers to brokers) is significant here. Within the chain of credit production, broking (buying and selling) and 'consumption' (called retirement), the potential for fraud and its subsequent discovery varies, and hence the motivation for 'due diligence' by the different entities varies.

The bulk (92 per cent) of carbon credit purchasers is corporations and half of their purchases are for corporate social responsibility or branding reasons and the balance for investment (Peters-Stanley and Hamilton 2012: vii). Some corporations also purchase accredited carbon credits to prepare for future compliance requirements (pre-compliance). All these credit 'uses' have very significant market, financial and reputational consequences if the credits were exposed as fraudulent. Making bold claims regarding carbon neutrality may be positive for marketing but also risk attracting the 'spotlight' of NGOs and other social movements which are aware of 'green washing' and are highly motivated to identify and publicise it. This type of exposure is a magnified risk – relative to that associated with the sellers of credits – and there would be significant motivation and capacity for the purchaser to perform detailed 'due diligence' and subsequent pressure for market (self) regulation, as in the case of HSBC in 2005. Their strategy to achieve carbon neutrality included an initial investigation into the integrity of the voluntary market and they concluded that: 'There will be individuals and companies out there who think they're doing the right thing but they're not. I am sure that people are buying offsets in this unregulated market that are not credible. I am sure there are people buying nothing more than hot air' (Adam 2006). HSBC went on to source their own credits, bypassing the large brokers.

We do not imply from this that significant carbon fraud will simply be eliminated through the market 'wising up'. In fact, as we identified above, the risk of exposure and reputational and economic damage that may ensue is very much related to social and political phenomena in the form of active NGOs and social movements. As some of the recent 'actor-network' approaches have emphasised, markets are not just situated in a social vacuum, and carbon markets, as 'proxy' markets, are highly constructed through the attempt to make carbon 'visible' (Mackenzie 2009). In fact, even those highly critical of the voluntary carbon markets recognise that resistance and critique have also shaped their development (Paterson 2010). Paterson makes the point that the proliferation of certification systems for carbon credits that ease the burden of due-diligence is largely related to a nexus of oppositional forces and market participants. These certifications and their range of standards have also served to differentiate carbon products based around the level of project integrity, sectoral inclusion or exclusion (forestry credit projects are seen to be highly risky), and social justice issues (cf. Social Carbon Standards). Whilst many of these standards were initiated by NGOs such as the Gold Standard by World Wildlife Fund in 2003, many now are organised by groups of corporations which, as Paterson (2010: 249) comments: 'clearly raises the question of corporate capture of the verification process'. Government or supra-government standards for offset credits have also

evolved, mainly in response to quality concerns for their use in the compliance cap-and-trade market. Credits certified through these processes are also available on the voluntary market.

Fraud in certified offset projects

The requirement for ‘additionality’ is one of the most controversial aspects of offset projects because it requires the establishment of an ‘imaginary’ emissions future or baseline to be extrapolated from the current emissions context. In essence, the purpose of this offset policy is to ensure that greenhouse gas reductions are ‘in addition to what would have happened anyway’ (Prairie 2013). That is, for credits to be issued, the projects do not have to demonstrate a sequestration of carbon (gross reduction) but a net reduction in relation to the imaginary baseline (that is, what would have happened in the absence of the project). Hence, projects such as supplying more efficient cooking systems in villages have produced carbon credits. However, establishing an imaginary future baseline is susceptible to misrepresentation and a relatively easy target for fraud (Barr 2011: 331-333). Earlier empirical studies of additionality of offset projects have identified that up to one-half of all initiatives had dubious or no additionality (Brown 2010; Schneider 2007: 9).

There are several types of systemic failure and misrepresentation. First, perverse incentive structures can motivate project developers to maximise carbon credit returns by increasing emissions prior to project so as to increase the ‘imaginary’ future baseline. The most prominent example of this is the incentive (in developing countries) to keep producing potent GHGs such as hydrofluorocarbons (HFC-23s) because of the low cost of destruction compared to the huge receipt of carbon credits. In 2008, HFC-23 offsets comprised 55 per cent of Certified Emission Reduction (CER) credits issued by in the Clean Development Mechanism (CDM) process – the primary source of internationally regulated credits. Credits derived from HFC projects are no longer exchangeable on the EU ETS. In the case of HFC-23s, rather than governments in developing countries prohibiting their production, they instead take advantage of the offset scheme through imposition of high taxes on credits issued. Further, the piecemeal project-by-project approval of additionality takes little consideration of national level policy which may (in the case of China) be committed to emission reduction and increasing renewable energy – in the absence of the CDM or other offset schemes. Hence, the actual ‘imaginary’ baseline may be well below that determined at the local level. Whilst China has committed to renewables, in 2007, all new projects based on renewables or lower carbon emitters had applied for CER credits (Wara and Victor 2008: 13).

The problem of additionality is an inherent weakness in offset projects, the extent of which will vary in accordance with the locational and technical details of the project itself. Projects most susceptible are those that provide credits for maintaining particular emission levels (such as conservation forests as carbon sinks) where the calculations of additionality are based on assumptions of future use that may degrade the sink. One can imagine situations where local collusion might occur in relation to future land use and, in establishing a baseline, propose sink degradation activities that may never have been undertaken in reality. The other component of additionality is the estimation of carbon benefits from the proposed project. Whilst this is less subjective than determining the baseline, it is possible that various forms of corruption and organised criminal activity could influence the verification process. As in the case of baseline misrepresentation or fraud, projects at risk include those where carbon verification is difficult and complex and perhaps methodologically novel. Barr (2011: 335), drawing on earlier work by Ross (2001), also makes the point that powerful state actors could find it financially rewarding to over-report emissions for short periods of time.

There are a number of studies (Barr 2011; Brown 2010; Drew and Drew 2010) that point to the vulnerability of verification and validation processes in the Kyoto based CDM process, the largest offset scheme. Significantly, CER credits from these projects can be traded with the

largest carbon trading system, the EU ETS. They are also traded in secondary markets. Attention to deficits in the CDM process was heightened in 2006 when spot checks by UN inspectors found significant irregularities in work by three prominent verifiers (Schneider 2007: 24). In fact, a general review of verifiers' reports indicated:

From [the] review of available documentation it appears that current methodological guidance from the Board is either not applied or, if applied, is not always documented. ... Validation reports for some registered CDM projects indicate that efforts to corroborate additionality claims were undertaken, other cases with no such indications were found ... The available documentation provides little evidence of external validation by DOEs [Designated Operational Entities] of key assumptions and data used for additionality assessment, though such evidence may exist elsewhere. (CDM 2008: 3)

In 2009, UN inspectors suspended the largest verifier, SGS UK, because of poor quality documentation and lack of adequate qualifications of their staff. The process of verification is integral to safeguarding against fraud. However, the offset verification industry is very price competitive with revenue per project declining and verifiers highly dependent on the project developers (Brown 2010). As project developers try to cut costs, they search for the verifiers with the lowest fees, with the issue of verification quality not being considered an important price factor. Furthermore, oversight of verifiers by CDM is limited by insufficient resources (Schneider 2007). Concerns have also been expressed regarding firms providing consulting advice to project developers and acting as verifiers for the project (Bachram 2004: 5).

The case of the CDM program is instructive for all other verified offset projects. Incentive structures should encourage objective verification and oversight from regulators and need to be robust and sufficiently resourced.

A particularly vulnerable area for fraud and corruption is the potential for various forms of pressure to be applied on local people. Schneider's (2007: 51-53) review of stakeholder consultation in CDMs is critical of the lack of detail and concern for the local people who might be affected. Only 40 per cent of project development documents had invited all relevant stakeholders to comment on the project. CDM projects must also be approved at the national level by the Designated National Authority (DNA). Criteria for approval, provided by the UN, are simply that the project achieves sustainable development objectives. Brown (2010: 250) suggests that, because DNA can accept or reject projects in the absence of decision making rules, the fortunes of a project could be influenced by bribery. Accusations of illegality in offset projects have mainly been in tropical forest contexts in developing countries. Here, the structural conditions for fraud and corruption mean that projects could be more risky and that the establishment of 'carbon credit' forests could occur through deception or bribery. In Papua New Guinea (PNG) and Peru, accusations have been made that private developers and NGOs have targeted the tropical forests to encourage indigenous leaders to sign away their rights to the forest. In these instances, it has been reported that Peruvian indigenous peoples, for example, have been pressured to sign agreements they cannot read in acts described as 'carbon piracy' (Vidal 2011). Moreover, accusations were made of PNG officials producing fake carbon credit certificates as a prop for explaining carbon credit deals to local leaders (Wilkinson and Cubby 2009).

Structural conditions for fraud and corruption

The risks of carbon fraud are heightened by structural conditions under which corruption proliferate. The growth in illegal forestry over the last decade (Contreras-Hermosilla 2002) provides the contexts for emerging carbon frauds to flourish. Such contexts are worth noting. First, geographic remoteness of projects undertaken in isolated areas, distant from public

scrutiny and difficult to monitor, affects the capacity of governing institutions to adequately administer projects and to enforce the law. Second, low levels of economic development, where a country or province lacks sophisticated monitoring of resources and can afford only a small and poorly trained bureaucracy, can mean that policing and intelligence services are weak, poorly trained and poorly paid. Unstable, inexperienced and poorly financed public sectors are more likely to be involved in bribery and corruption (White 2011). Third, weak governance and under-resourced regulation that is poorly organised or stretched over large areas with inadequate lines of responsibility and accountability can lead to exploitation of administrators and police in small isolated pockets by criminals, through bribery and corruption. Fourth, unclear land tenure systems or under-developed land registers and tenure systems with complex community-based or customary land ownership systems can also be exploited by criminals who are intent on land grabs or 'divide-and-conquer' approaches to gaining power over land ownership (Wily 2008).

Most of the above conditions occur in countries where the newly accredited UN Reducing Emissions from Deforestation and Forest Degradation (REDD+) program will occur. This program produced carbon credits for forest sink conservation and development and expects to supply funds between US\$17-33 billion every year, much of which will be destined for forest-rich developing countries. The program is not just project-based but intends to compensate governments, communities, companies and individuals in developing countries that undertake to reduce emissions loss from forests. The huge sums of money involved and structural conditions in these countries have NGOs greatly concerned with potential fraud, corruption and bribery (see Global Witness 2011). The significance of REDD+-originated carbon credits will increase markedly in 2013 when the EU ETS preferentially requires credits from developing countries.

Green criminology and the visibility of carbon

There are numerous directions one could take with the above discussion. For now we wish to pursue emerging landscapes of carbon fraud within discourses in Green Criminology. We do this for two reasons. First, advocates of the green criminological enterprise are wedded to a project that pursues environmental issues through a lens of social justice whilst advancing human and animal rights (South and Brisman 2013). Criminological analyses of climate change (South 2012; White 2012) and air pollution (Halsey 2013; Walters 2010) have identified the ways in which state and corporate power advance trade and fiscal policies. Such works inevitably involve an examination and intersection of the concepts of harm, power and justice, most notably in the ways that power is mobilised to justify a market model of capitalism with unjust and harmful consequences for the environment and the world's most vulnerable peoples. Much of this is relevant to carbon trading and emerging fraud risks. Second, green criminology continues to 'harness both risks and rights' in pursuit of a global criminology (Aas 2007; Walters 2007:199) that involves uncovering or rendering visible those 'deviations' or 'irregularities' that exploit and harm the environment for maximum profit (South 1998).

In the introduction to this article, we used the notion of economic 'visibility' to contextualise the problem of fraud in carbon markets. We identified that political and institutional change allowed for economic penalties and substantial profits for those involved in, respectively, producing and consuming GHGs. Of course, the discourse of human induced 'excessive' GHG emissions has had some political import for about 30 years: for example, the 'The Greenhouse Effect' in the 1980s; later 'Global Warming'; and now 'Climate Change'. The scientific certainty has intensified, political support developed and new technologies of practice such as carbon markets instituted. It has been argued cogently that the relative success of carbon market institutionalisation has come about through political coalitions between powerful actors such as financiers and environmentalists (Paterson 2012: 59). Importantly, some fractions of capital that rely on high energy consumption, at least in the short term, are losers and other fractions

such as the insurance industry and sunrise technology industries will benefit from climate change reduction. We argue that such actors have provided carbon with a cultural and economic visibility that has enabled new criminal enterprises. It is not a visibility linked to surveillance or 'panoptic power' as Majid Yar has argued (Yar 2003), nor a visibility mediated through police (see Mawby 1999) or social media (Thomson 2005); rather it is an emerging criminal risk that has emerged through social and political agreement about the status of carbon as a tradeable entity for a collective global good. Its property or commodity status has been uncontested within a landscape of reasoning and understandings premised on the persuasive platforms of environmental ethics and trade. As Langer (1957) once famously wrote: 'the visible is not simply the visual', a reference to emerging meanings within the hidden text of image. For us, carbon dioxide discharges are constructed within carbon markets not as toxic and poisonous gases but as economic entities or commodities for global trade in GHG emission reductions. The entities, like the gases themselves, are not visual, but have been made visible through political and economic processes of discourse. It is these processes that have created the contexts for new forms of fraud.

Fraud, as one of the more elusive and adaptable crimes, has exploited this increased economic visibility in carbon markets. Further, as demonstrated in the case of missing trader fraud of VAT in the EU ETS, fraud does not just impose extensive financial losses on states, corporations and individuals. Its existence strikes at the heart of the capacity of these technologies to function and deliver emission reductions. Markets only effectively coordinate and alter behaviour if transaction risks are low and participants play by the systems rules. Further, more significant consequences entail from the exploitation of fraud events for political purposes, such as from this by-line in *The Australian*: 'Tony Abbott [Opposition leader in the Australian Parliament] has seized on warnings about fraud in international emissions trading schemes as a reason to dump Labor's planned carbon tax'. Abbott was quoted as saying: 'I think that we are going to have to have a very intrusive carbon cop if an emissions trading scheme carbon tax goes ahead' (cited in Barrett 2011). The fraud in the EU ETS – a fraud very specific to VAT or a goods and services tax (GST) and requiring a rapid, tradeable context – is generalised to the Australian tax scheme which is not tradeable and has no VAT or GST.

Fraud and fraud risk in the regulated offset project markets has also had significant influence on the attractiveness of carbon credits in the compliance cap-and-trade systems. Whilst there are few cases of established fraud in Australia, there is considerable potential for misrepresentation because of the criteria used to establish emission reduction from baselines (the 'counterfactual') and concerns about the procedural integrity of validation and verification. It is likely that fraud risk has contributed to the decline in value of CERs and Emission Reduction Units derived from the CDM and these Kyoto-regulated offset credits are now being limited in terms of access to the large cap-and-trade systems. The phase three of the EU ETS has almost halved the total cap of these units eligible to be swapped with European Union Allowances (Kossoy and Guigon 2012: 21). Also, credits from projects that involve the disposal of GHGs (such as hydrofluorocarbons) and that have been open to rorting by nation states will be no longer tradeable with allowances from the EU ETS. Australia's proposed cap-and-trade system will be open to a maximum of 12.5 per cent of international Kyoto units but will accept 100 per cent of offsets derived from the domestic Carbon Farming Initiative. The new Californian cap-and-trade scheme also has strict guidelines for credit use with only six per cent exchangeable with allowances for each compliance period and an 'invalidation' regulation that can remove credits from registries if projects are found to be invalid within a period of eight years from issue (Kossoy and Guigon 2012: 118).

Conclusion

As is often the case, new markets provide new criminal enterprises and this article concludes that the cultural and economic visibilities of carbon have provided new opportunities for fraud and tax evasion. Carbon markets are an extension of neoliberal governance and the commodification of nature. For some, carbon crime is symptomatic of wider systemic properties of carbon marketisation that are inherently corruptible (Lohmann, 2010) and fraudulent (Bachram 2004). Others, however, argue that 'marketisation' of carbon is a political project itself and can be shaped by social concern for its negative consequences (MacKenzie 2009).

Carbon is a unique product for marketisation. Investments in carbon offsets projects rely heavily on brokers for advice. Unlike most 'commodities', carbon is an entity without a designated origin that cannot be assessed for market performance and due diligence. The complex carousel frauds in Europe have resulted in Governments providing VAT exemptions from carbon transactions. This article concludes that an uncontested, under-researched and unchallenged trade-oriented instrument, embedded as it is in discourses of environmentalism and climate change and granted social and economic visibility by powerful actors, has provided the contexts for fake offsets; fabrication of carbon certificates; bribery of government officials; and the exploitation of Indigenous and poor peoples in developing countries.

The world-wide trade in pollution is a market-led model to provide solutions to market problems. It has unfolded, like so many trade centred initiatives, without due consideration for social and environmental justice. Green criminology continues to place such topics on the international political and intellectual agenda. In doing so, it reserves a special and significant place to identify environmental injustice and corruption when it appears as progress.

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